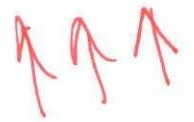
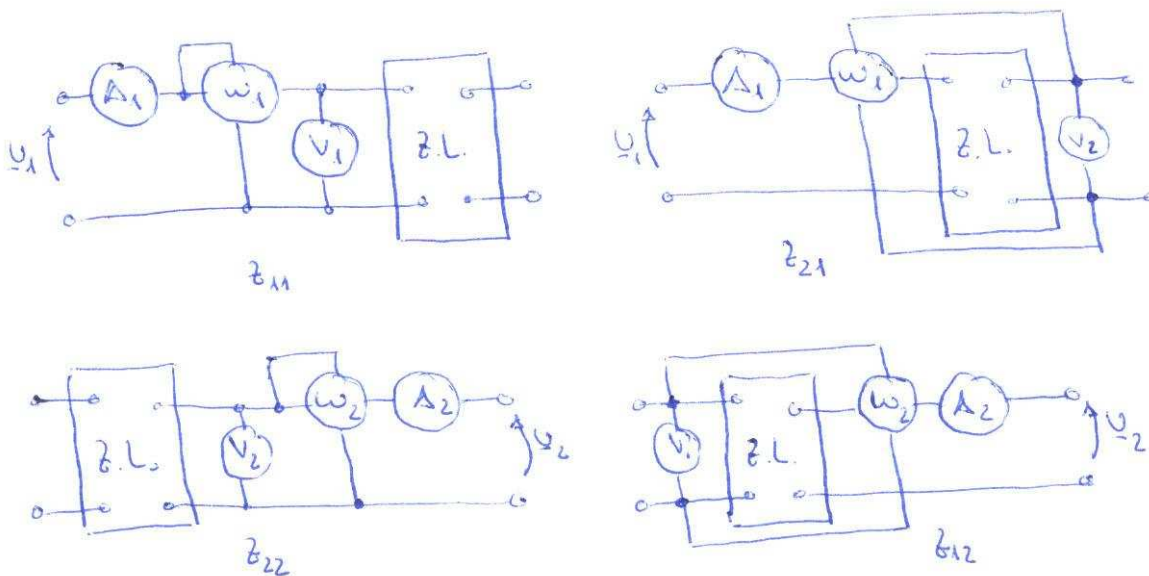


21. Praktika

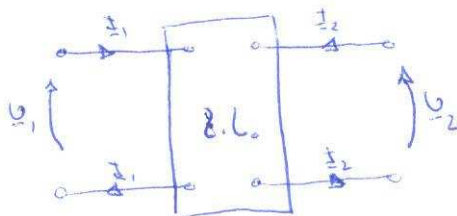


Korronte alterna sinusoidalak elikatutako ate biko baten Z parametroen determinazioa



Oinarri teorikoak

Bi terminal bikoite eskuragarri dituen edozein sare elektrikoari ate biko deitzen zaio. Testatze eta karakterizatzeko hurrengo sistemenen arabera erabakitzen da nola ditzaiteke:



$$U_1 = Z_{11} \cdot I_1 + Z_{12} \cdot I_2$$

$$U_2 = Z_{21} \cdot I_1 + Z_{22} \cdot I_2$$



$$Z_{11} = \frac{U_1}{I_1} \quad \text{non } I_2 = 0$$

Sarearen inpedantzia itxura aktibo irekian duena

$$Z_{12} = \frac{U_1}{I_2} \quad \text{non } I_1 = 0$$

Transfarentzia inpedantzia sarearen aktibo irekian duena

$$Z_{21} = \frac{U_2}{I_1} \quad \text{non } I_2 = 0$$

Transfarentzia inpedantzia itxura aktibo irekian duena

$$Z_{22} = \frac{U_2}{I_2} \quad \text{non } I_1 = 0$$

Irekar inpedantzia sarearen aktibo irekian duena

Wird Instrumente bei einem Parameter bestimmt: Voltmeter bat, Amperemeter bat etc. Voltmeter etc. Amperemeteren etc. selbstbaren ist besten Impedanzwert nachher gekung dgu etc, Voltmeteren bei einem abarator, argumenta.

$$\left. \begin{array}{l} Z_{11} = \frac{V_1}{I_1} \\ \varphi_{11} = \arccos \frac{\omega_1}{A_1 \cdot V_1} \end{array} \right\} \begin{array}{l} Z_{11} = Z_{11} \varphi_{11} \\ Z_{21} = Z_{21} \varphi_{21} \end{array}$$

$$\left. \begin{array}{l} Z_{22} = \frac{V_2}{I_2} \\ \varphi_{22} = \arccos \frac{\omega_2}{A_2 \cdot V_2} \end{array} \right\} \begin{array}{l} Z_{22} = Z_{22} \varphi_{22} \\ Z_{12} = Z_{12} \varphi_{12} \end{array}$$

Nachst etc. heute gehen erabiltten dnen Parameteren an, interessengemige Suerbuku reistigung 100 dstrago transformatio formeln isterten. Heute lotu dthgu eskurtraa etc. erste Suerbuku dekte.

Ersteren beginnende, aktiven etc. passiven der gaten dekte. Passiven dekte, hru notu bereinditragu:

$$\text{Elkerrekte} \rightarrow Z_{12} = Z_{21} \quad \text{Suerbuku} \rightarrow Z_{12} = Z_{21} \text{ etc } Z_{11} = Z_{22}$$

$$\text{Antistruktu} \rightarrow Z_{12} = Z_{21} \text{ etc } \Delta_1 = 1$$

Praktikaren gauties

Atebiko baten Z parametere determiniert etc. gese, klasifikatu. Jernesen, heute erabilt, parametere hysubik (H) etc. transubio parametere enderestabte dthgu.

Beherrestu netewale

$$\text{Amperemeter bat: } \frac{1}{\omega} \approx 1 \rightarrow \star$$

$$\text{Voltmeter bat: } \frac{1}{\omega} \approx 1 \rightarrow \star$$

$$\text{Wattmeter bat: } \frac{1}{\omega} \approx 1$$

Entsegupeto atebiko hneko:

Loetutako energiat

Amperemetraar esika anavara baltas: 5 jati.

Amperemetraar korante baltas maximeas 5A

Voltmetraar esika anavara baltas 300 jati.

Voltmetraar tentso baltas maximeas 300V

Wattmetraar esika anavara baltas: 75 jati

Wattmetraar korante baltas maximeas: 5A

Wattmetraar tentso baltas maximeas: 300V

$$k_A = \frac{5A}{5 \text{ jati}} = 1 \text{ A/jati}$$

$$k_V = \frac{300V}{300 \text{ jati}} = 1 \text{ V/jati}$$

$$k_W = \frac{300 \cdot 5}{75} = 20 \text{ W/jati}$$

| Sarakinta | A | | | V | | | W | | | Z | φ |
|-----------|-------|-------|------|-------|-------|-----|-------|-------|-----|-------|--------|
| | Irak. | k_A | A | Irak. | k_V | V | Irak. | k_W | W | | |
| 1 | 3'05 | 1 | 3'05 | 220 | 1 | 220 | 15 | 20 | 300 | 74'24 | 64'32° |
| 2 | 3'05 | 1 | 3'05 | 200 | 1 | 200 | 1 | 20 | 20 | 66'21 | 88'16° |
| 3 | 3'11 | 1 | 3'11 | 222 | 1 | 222 | 15 | 20 | 300 | 73'22 | 65'53° |
| 4 | 3'05 | 1 | 3'05 | 202 | 1 | 202 | 1 | 20 | 20 | 66'67 | 88'19° |

$$Z_{11} = 74'2373 \text{ } 64'5161^\circ$$

$$Z_{21} = 66'2069 \text{ } 88'1619^\circ$$

$$Z_{12} = 73'2203 \text{ } 65'5239^\circ$$

$$Z_{22} = 66'6667 \text{ } 88'1743^\circ$$

$$H_{11} = 12'9563$$

$$H_{21} = -0'9042$$

$$H_{12} = 0'0137$$

$$H_{22} = 0'9105$$

$$A = 1'1213$$

$$B = 15'4347$$

$$C = 0'0151$$

$$D = 1'1059$$